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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,472	02/02/2001	Masaaki Hiroki	SEL 238	7144

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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/776,472

Applicant(s)

HIROKI ET AL.

Examiner

Michael Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6,7 and 10-47 is/are pending in the application.
- 4a) Of the above claim(s) 13-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6,7,10-12 and 19-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 031104.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 6-7, 10-12, and 19-47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification as originally filed for the term "continuously discharging", especially in the context argued by Applicant on p. 13 of the response, as differentiating from intermittent ink-jet printing.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 6, 10-12, 19-20, 22-25, 31, 33-37, and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita et al. (WO98/24271, hereafter '271. References made are to the English equivalent, US Patent Application 2002/0041926) in view of Horike (U.S. Patent 4,281,332, hereafter '332), Iguchi (WO98/27579, hereafter '579. References made are to the English equivalent US Patent Application 2002/0009536.) and Kasubuchi et al. (U.S. Patent 3,878,517, hereafter '517).

Claims 6, 20, 31, and 37: '271 teaches filling an ink-jet nozzle with ink (an application liquid) for forming an electroluminescent (EL) layer and applying it to a pixel column (Abstract; Fig. 1).

'271 does not explicitly teach that the ink-jet nozzle works using ultrasonic oscillation, but instead teaches the use of a vibration pulse pressure dispenser (See [0083]-[0087]). '332 teaches a particular pulse pressure dispenser (col. 1, lines 6-11), which uses ultrasonic vibrations (i.e., oscillations) in order to provide pressure pulses (col. 3, lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the ultrasonic vibrator of '332 as the particular vibrator of '271 with a reasonable expectation of success because '332 demonstrates that ultrasonic vibrations are capable of providing the pressure pulses to operate ink-jet printing nozzles.

'271 and '332 do not explicitly teach continuously discharging the application liquid while the nozzle and pixel column are connected through the application liquid nor traversing by scanning along a direction parallel to a pixel column. The differently colored pixels of '271 appear to be small rectangles rather than elongated stripes (Fig. 8). However, '579 teaches that the differently colored areas of plasma displays (a particular type of electroluminescent displays), may be elongated stripes, which are printed by traversing a nozzle along the direction parallel to the barrier ribs ([0206]-[0207]), which are between, and therefore parallel to the underlying electrodes (Fig. 1; [0293]). '517 teaches that ink-jet printing using ultrasonic oscillations may be used to provide ink intermittently or to provide a continuously-discharged stream of droplets (col. 7, lines 6-24). However, '579 teaches that the deposited material in the pixel column may be connected to the nozzle via the liquid stream (Fig. 1). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65

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USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used different colored pixels of elongated stripe shapes because '579 teaches that such is an operative embodiment of differently colored pixels for electroluminescent displays and to have deposited such stripes by a continuous stream because '579 teaches that a continuous stream connecting the nozzle and the pixel column may be used to deposit such stripes and because '517 teaches that ultrasonically-operated ink-jet printers are capable of providing continuous streams.

Claims 10-11, 22-23, 33-34, 39-40: '332 teaches that the ultrasonic vibrations provide pressure pulses that eject the droplets (col. 3, lines 1-15).

Claims 12, 25, 35, and 42: '579 teaches that when depositing electroluminescent material between partition walls of EL displays ([0001]-[0003]), it is desirable to maintain a constant distance between the substrate and the nozzles, and that such distance may be maintained by an element in contact with the partitions ([0246]-[0249]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a contact element in contact with the partition walls in order to have maintained a constant distance between the nozzle and the substrate during the coating process.

Claims 19, 24, 36, 41: '271 teaches that the ink-jet printer prints between partition walls (banks) (105) covering at least an edge portion of pixel electrodes (101, 102, 103). (Fig. 1; [0043]-[0050]).

Claims 20 and 37: '332 teaches that a heater may be provided to control the viscosity of the ink (col. 11, lines 5-26).

6. Claims 7, 21, 32, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita '271 in view of Horike '332, Iguchi '579, and Kasubuchi '517 as applied to claim 6, 20, 31, and 37 above, and further in view of Fujimura '803.

'271, '332, '579, and '517 are described above. '271 demonstrates that the orifice may have a smaller inside diameter than the rest of the nozzle (Fig. 11), but does not explicitly teach the provision of a heater on the orifice. '332 teaches that a heater may be provided to control the viscosity of the ink (col. 11, lines 5-26).

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'803 teaches that the thermal energy for ejected ink jet droplets may be provided by heaters at the orifice (col. 2, lines 40-45; col. 5, lines 35-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided heaters at the orifice (which has a smaller diameter than the rest of the nozzle) with a reasonable expectation of success because '356 demonstrates an operative ink-jet nozzle formation with such a smaller nozzle and because '803 demonstrates that nozzles provided at the ink-jet nozzle orifice are operable for ejecting the ink.

7. Claims 26, 28-30, 43, and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita '271 in view of Horike '332, Iguchi '579, and Kasubuchi '517 as applied to claims 6 and 31 above, and further in view of Kurosawa et al. (U.S. Patent 6,057,647, hereafter '647).

'271, '332, '579, and '517 are described above. '271 teaches that the EL elements may be deposited on top of thin film transistor (TFT) elements ([0015], [0134], [0138]) and teaches that the EL elements may be formed by forming pixel electrodes on a substrate and forming a bank overlapping the edges of the pixel electrodes on the pixel electrodes, as discussed above. '271 does not explicitly teach that a TFT is formed on a substrate, an insulating film is formed on the TFT, and the pixel electrodes (and then banks) are formed on the insulating film.

'647 teaches a method of depositing EL elements onto TFTs, in which TFTs (2, 3) are formed on substrate (31) and then insulating layer (52) is formed on the TFTs, followed by the anode (161) (as the pixel electrodes of '271) are anodes and partitions (63) (Fig. 14, col. 11, lines 1-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the configuration of '647 as the particular configuration to integrate the EL elements of '271 with the TFTs of '271 with a reasonable expectation of success because '647 teaches that that configuration is an operative method of using TFTs in conjunction with EL elements.

Claims 28-29, 45-46: See discussion of claims 10-11, above.

Claim 30, 47: See discussion of claim 12, above.

8. Claims 27 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita '271 in view of Horike '332, Iguchi '579, and Kasubuchi '517 and further in view of Kurosawa '647 as applied to claim 26 and 43 above, and further in view of Fujimura '803 as applied to claim 7, above.

Response to Arguments

9. Applicant's arguments filed 4/23/2004 have been fully considered but they are not persuasive.

The replacement 1449 filed 3/11/04 is acknowledged and an initialed copy is enclosed.

Applicant argues that Figs. 1B, 1C, 13B, 13C, 14A, and 14B demonstrate continuous discharging. The argument is unconvincing because the Figures are snapshots in time and do not indicate what happens immediately before or after the moment of discharge shown. Therefore, they are incapable of demonstrating "continuously discharging".

The rejections under 35 USC 112, 2nd paragraph are overcome by amendment.

Applicant argues that the new limitation of "continuous discharging" overcomes Miyashita, Fujimura, and Horike because they are directed to ink-jet technology. Applicant argues that it is well known that in ink-jet printing drops are discharged intermittently rather than continuously. Applicant's argument is unconvincing because it is unsubstantiated by evidence and because it is contradicted by Kasubuchi '517, which teaches that the droplets may be discharged in a continuous stream rather than intermittently.

Applicant argues that Kasubuchi teaches that the stream is broken up into droplets. The argument is unconvincing because it does not address the totality of the teachings of the references. Iguchi '579 teaches that the pixel column and the nozzle may be connected by a continuous stream, and Kasubuchi '517 teaches that at least for some distance outside of nozzle 2 the liquid exists as a continuous stream. Therefore, even though '517 does not use its printer to connect its nozzle and stream, it does teach that ink-jet printer nozzles are capable of emitting continuous streams.

Applicant argues that Iguchi '579 does not teach that its ink contains an organic EL material. The argument is unconvincing because one of ordinary skill in the art would not have expected the identity of the particular material in the ink to have prevented it from reaching the

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substrate. Applicant argues that '579 is not for performing the same function as that of Miyashita or Horike. The Examiner respectfully disagrees because Miyashita and Horike seek to perform the function of applying an electroluminescent material to a substrate. '579 also seeks to apply an electroluminescent material to a substrate (i.e., the same function) and teaches that deposition from a nozzle wherein the liquid connects the nozzle to the pixel column is a successful means of achieving this function.

Applicant argues that no other motivation for combining Iguchi and the other two references has been provided. The argument is unconvincing because the selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Tuesday-Friday and alternate Mon. 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Cleveland
Patent Examiner
June 16, 2004